RESEARCH HIGHLIGHT

April 2007

Technical Series 07-113

Sustainable Northern Development Charrette in Yellowknife

INTRODUCTION

Yellowknife is a thriving city in the Northwest Territories of Canada, on the northern shore of Great Slave Lake at latitude 62° North. With its rapid growth, the city faces some of the highest rental rates and building costs in the country. The high demand for serviced sites, and the low supply of developable land with inherent cost increases, are critical issues for the city. Innovative, efficient, sustainable and affordable development is required to address those problems.

THE CHARRETTE

A charrette (design workshop), sponsored by Canada Mortgage and Housing Corporation (CMHC), was held May 17 to 19, 2005. The objective was to explore the issues of Northern community development and to suggest specific solutions to achieve a sustainable and high quality of life.

The charrette examined ways to balance different aspects of sustainability to promote healthy, affordable, high-quality living environments in Canada's North, by using a holistic approach to finding new solutions.

The charrette focused on the 100-acre, city-owned Negus Point property, in Yellowknife.

The site is close to the abandoned Con Mine and will require remediation before it is developed for residential use. It is located on the shore of Great Slave Lake and is less than a 10-minute drive to the downtown area. The low-sloped land features rocky outcrops and areas vegetated by coniferous trees and northern grasses.

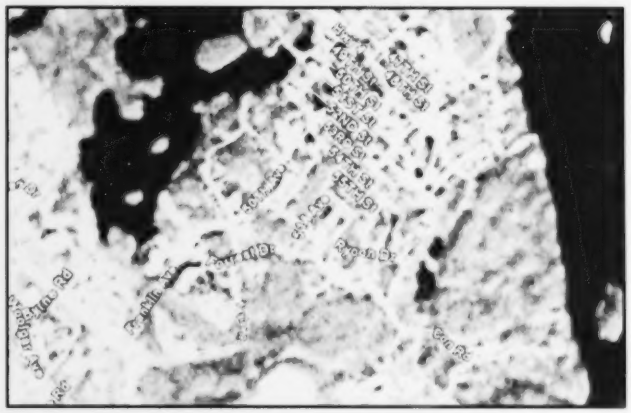

Figure 1 Satellite image of Yellowknife, with the Negus Point site on the lower right, serviced by Con Road

Figure 2 The Negus Point site with the mine shaft near the waterfront

Canada

CMHC SCHL
HOME TO CANADIANS

The three-day charrette brought together people such as municipal and territory representatives, architects, planners, engineers and northern planners, who contributed diverse skills and expertise. The charrette was intended to introduce the Integrated Design Process (IDP), a method that integrates a multi-disciplinary approach throughout the design, implementation and commissioning of buildings. The IDP incorporates issues that are seldom addressed in a standard design practice; the multi-disciplinary IDP teams treat them in a more holistic way.

The participants were asked to consider several inter-related issues during their team discussions, such as road construction in the fragile Northern ecosystem; alternative water and sewage treatment that does not rely on the over-taxed municipal system; more efficient construction technologies; and how the new community would describe a high quality of life for Northerners.

There were 32 attendees including speakers, facilitators and resource people. All participated as members of one of three charrette teams. Each team included, as much as possible, a balance of architectural, engineering, planning and other professions related to development. Resource people circulated among the teams to provide their expertise. Teams were to embark upon parallel courses, but from their own vantage point and method of approach. Two teams produced development concepts for the site; the third team produced sustainable guidelines that could inform a community-focused design competition for the site.

DESIGN CONCEPTS

All three team concepts explored similar issues and proposed a mixed density and variety in ownership tenure that included affordable, entry-level housing. The community proposed by - all groups should best reflect sustainable goals through an integrated, inclusive community—including small commerce, community services, information and research facilities, where pedestrian movement would be encouraged and protected, and access and views to the waterfront would be conserved.

SATELLITE COMMUNITY DEVELOPMENT

On-site wastewater treatment, and geothermal water-sourced district heat offer possible infrastructure economies and these concepts need to be developed further. The establishment of a Yellowknife research facility was proposed to test potential systems, to develop northern data and to train local expertise. Such systems may ultimately save the municipality the cost of upgrading infrastructure that is overstretched by increased growth. Appropriate new technologies may facilitate the development process after detailed studies of timeliness, cost, reliability and maintenance factors are considered together with social and environmental benefits.

NEW OPTIONS FOR THE DEVELOPMENT PROCESS

Design competitions can offer innovative planning ideas. For this concept to work well, Northern principles of sustainable development, detailed specifications and requirements need to guide the designs and implementation.

WORKING WITH NATIVE TOPOGRAPHY AND HYDROLOGY

A common approach was to use local bedrock formations to optimize solar exposure while minimizing wind scouring. In the schemes, roads and housing follow these contours to reduce environmental damage to the fragile ecosystem. The marsh located in the low-lying wetlands areas follows lines of natural drainage that connect much of the town. By using—while protecting—these low-lying areas for continuous pedestrian, bike and ski paths, they could connect with all Yellowknife. Some of these wetlands might also serve as fish hatcheries and advanced water treatment to relieve the load on the central municipal system.

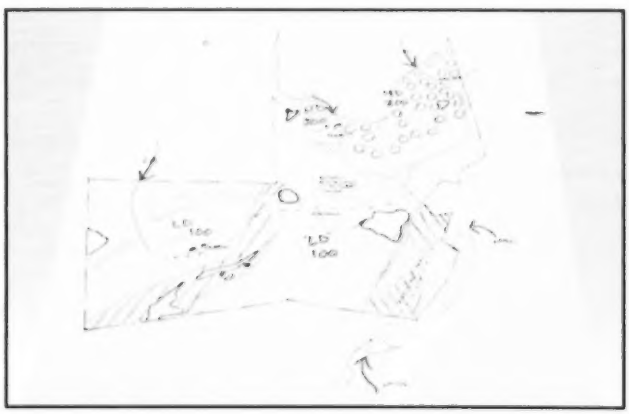

Figure 3 Concept sketch of the Negus Point site

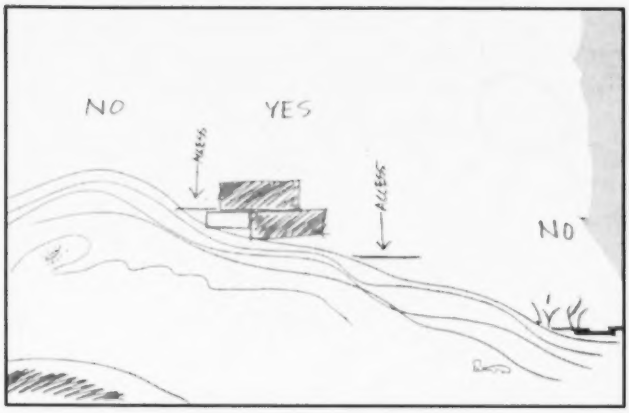

Figure 4 Development on south-facing slopes for solar optimization, protecting low-lying wet land

Figure 5 Discussions during the charette

The participants included:

Patrick Scott, Andrew Robinson, Blake Lyons, Bob Bromley, Al Bender, Cliff Sabrish, David Klingbeil, David Widdis, Dr. Paul Tinari, Ray Cullum, Paul Chaulk, Eric Chan, Gavin Renwick, Gordon Van Tighem, Grant Morrison, Joseph Ayoub, Michel Lanteigne, Larry Jones, Karen Le Gresley Hamre, Richard Seifert, Robert Boon, Ron Alward, Ron Tecsy, Troy Vassos, Stephen Fancoot, Tony Rabesca, Sandra Crockett, Wayne Guy, Bruce McOuatt, Sandra Marshall, Bill Semple.

Implications for Northern Communities -

Charrettes are an effective tool to bring together stakeholders and specialized consultants who explore together their particular community's issues while placing a high value on sustainable solutions.

CMHC Project Manager: Sandra Marshall

Research Consultant: Guy Architects

Housing Research at CMHC

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.

This fact sheet is one of a series intended to inform you of the nature and scope of CMHC's research.

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Printed in Canada
Produced by CMHC 23-04-07

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